1.   (Amended) A method for segmenting a point distribution with numerous points into partial areas, which each exhibit specific structural elements[, with the following steps] comprising:

a)   determining for each point (p_i), a feature vector (x_i) [is determined,] whose components are determined based on at least several scaling factors belonging to [the] a respective point;

b)   [the] determining accompanying feature vectors (p_i^1) [are determined] for a predetermined number of reference points (x_i^1) of the point distribution for which [the] allocation to one of the structural elements is given, and texture classes each corresponding to the underlying structural elements are formed out of the feature vectors of the reference points;

c)   [for all remaining points (p_i^n) of the point distribution that are not reference points,] determining the distance between the respective point and each of the texture classes [is determined] for all remaining points (p_i^n) of the point distribution that are not reference points based on a distance measure in the feature space, which is fixed by the components of the feature vectors;

d)   allocating each of the points (p_i^0) [are each allocated] to [the] a texture class for which [the] a lowest distance was determined; and

e)   [the] forming partial areas of segmentation [are formed] out of [the] respective reference points belonging to a texture class and the points allocated in step d).

2. (Amended) [A] The method according to claim 1, in which several isotropic and anisotropic scaling factors (α) are determined as components of the feature vectors $(\hat{x}_i)$.

3. (Amended) [A] The method according to claim 1, in which expected values of several scaling factors are determined as components of the feature vectors $(\hat{x}_i)$.

4. (Amended) [A] The method according to claim 2 [or 3], [in which the] further comprising determining anisotropic scaling factors ascertained for a point [are determined] in various coordinate systems rotated relative to each other.

5. (Amended) [A method according to claim 1, in which an ellipsoidal distance measure is used as a local distance measure in step c) for each texture class] The method according to claim 3, further comprising determining anisotropic scaling factors ascertained for a point in various coordinate systems rotated relative to each other.

6. (Amended) [A method according to claim 1, in which a Euclidian distance measure is used as a shared distance measure in step c) for all texture classes] The method according to claim 1, in which an ellipsoidal distance measure is used as a local distance measure in step c) for each texture class.

7. (Amended) [A method according to claim 1, in which the segmented partial areas are displayed, temporarily stored and/or further processed] The method according to claim 1, in which a Euclidian distance measure is used as a shared distance measure in step c) for all texture classes.

8. (Amended) [A method according to claim 7, in which the size of the partial areas is quantitatively acquired simultaneous to displaying the segmented partial areas] The method according to claim 1, further comprising displaying, temporarily storing and/or further processing segmented partial areas.

9. (Amended) [A image segmentation arrangement for segmenting a point distribution out numerous points, with a measuring device (1) for acquiring the point distribution, a filtering device (2) for scanning and filtering the point distribution, an input device (3), a calculating device (4) and an output device (5), wherein the filtering, input and calculating devices (2, 3, 4) are designed to execute a method according to one of claims 1 to 8] The method according to claim 8, further comprising quantitatively acquiring the size of the partial areas substantially simultaneously to displaying the segmented partial areas.

10. (Amended) [Method] The method of [using a device] according to claim [9] 1, which processes [to process:]

-   images of medical or biological objects;

-   images of materials;

-   point distributions of complex static systems;

-   point distributions that reproduce system status of complex, dynamic systems; and

-   time patterns for dynamic systems.

11. (New) An image segmentation arrangement for segmenting a point distribution out of numerous points, with a measuring device for acquiring the point distribution, a filtering device for scanning and filtering the point distribution, an input device, a calculating device and an output device, wherein the filtering, input and calculating devices execute a method according to claim 1.